The Link Between Imports and Food Security

Stacey Rosen[1]

Abstract: In many low-income food deficit countries agricultural sectors have performed at full capacity. For these countries, as well as those where potential for agricultural growth is quite limited, commercial imports could play a major role in their future food security position. The objective of this article is to review the trends in import dependency, the contribution of food aid to food supplies, and factors affecting commercial import capacity in the countries of North Africa, Sub-Saharan Africa, Asia, and Latin America.

Introduction

To achieve food security—with respect to aggregate quantities, not household access—countries have two options: accelerate domestic agricultural production or increase imports. The first option is certainly a possibility for many of the low-income countries that have performed below their potential due to inappropriate producer policies, prolonged civil strife, or very low adoption of new technologies. However, agricultural sectors in many countries have been performing well, or have maximized their potential and yet they continue to face—or are projected to have— food gaps. For these countries, as well as those where potential for agricultural growth is quite limited, commercial imports could play a major role in their future food security position.

For low-income countries, food aid has been a supplement to commercial imports. However, food aid imports are at the discretion of donor countries and the recipient countries have little say in allocation decisions. At one time, food aid contributed a significant share of food supplies in some of the low-income, food deficit countries. However, donations peaked in the early 1990's and have fallen considerably since then. The prospects of food aid rebounding to historical levels are not promising given budgetary policies in many donor countries. This means that commercial imports will be the key to increasing food supplies in countries where production growth is unlikely.

As defined in the model used in this report, the principal determinants of commercial food imports are foreign exchange availability and food prices. The ability to finance commercial imports varies considerably across low-income countries. The performance of the export sector is crucial to providing the foreign exchange to enhance commercial import capacity. In addition to financing imports, exports have a direct effect on the domestic economy and also support debt service payments which are critical to maintaining a country's creditworthiness. World commodity prices also influence commercial import capacity. A decline in food prices raises the capacity to import. On the other hand, a decline in prices of goods exported by developing countries reduces import capacity.

This article reviews the trends in import dependency, the contribution of food aid to food supplies, and factors affecting commercial import capacity in the countries in four regions of this study: North Africa, Sub-Saharan Africa, Asia, and Latin America. The NIS region has been omitted from the historical discussion because of lack of data. The Food Security model is used to determine the impact of changes in major variables (such as export earnings and world prices) on food security in these regions.

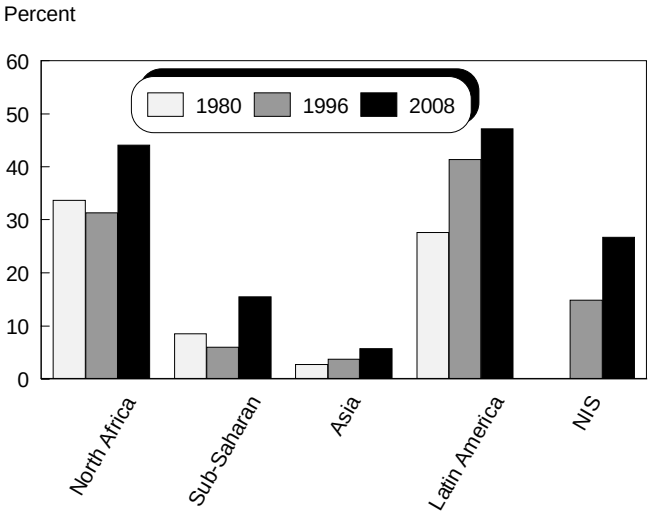
Import Dependency

Between 1980 and 1997, North Africa was the most import dependent region in this study with commercial imports contributing 39 percent of the food supply, on average (figure B-1). Latin America was close behind with a share of 34.3 percent. Sub-Saharan Africa and Asia relied on imports to a much lesser degree with dependency ratios of 6.3 and less than 3 percent. While imports accounted for a very small share of food supplies in Asia, commercial imports in this region were rising the fastest of all the regions at nearly 8 percent per year. Latin America's commercial import growth was also strong. Growth in Sub-Saharan Africa, however, was weak—less than 2 percent per year—reflecting the region's poor financial situation.

Examining the projection period (1998-2008), the strongest import growth is projected to occur in Latin America, 3.4 percent per year, and Asia, 3.1 percent. The jump in Latin America will lead to the highest import dependency of all regions, averaging 45 percent during the decade. Asia's import dependency will nearly double from historical levels, but remain low at 5.3 percent. Sub-Saharan Africa's import

[1]Agricultural economist with the Market and Trade Economics Division, Economic Research Service, USDA.

Figure B-1
Import Dependency



growth is projected to remain even with historical levels leading to an import dependency of nearly 16 percent.

Role of Food Aid

For many countries in the study, food aid has played a critical role in boosting food supplies. However, this role has diminished along with the declining trend in global donations. In the early 1990s, cereal food aid averaged roughly 14 million tons per year, but fell steadily thereafter to 5.5 million in 1997/98. FAO's forecast for 1998/99 is for aid to increase to roughly 8 million tons, still well below historical levels. For North Africa and Asia, food aid trends have followed similar paths. In both regions, the food aid share of food imports fell from around 20 percent in the early 1980s to roughly 2 percent in more recent years. In Latin America, the food aid share peaked at nearly 40 percent in the mid-1980s, but has since fallen to less than 5 percent. Sub-Saharan Africa is the only region where food aid has consistently played a major role in augmenting food supplies. While the share of imports has fluctuated widely during 1980-97—ranging from 22 to 57 percent—it has averaged nearly 40 percent. This average is much higher than any of the other regions, with Latin America next in line with an average of 23 percent.

Factors Influencing Import Capacity

In the model used in this report, commercial imports are assumed to be a function of domestic production, world commodity prices, and foreign exchange availability. Foreign exchange availability is defined here as the sum of export earnings and net flow of credit. Net credit flow is assumed constant in the model, which means among all the variables, export earnings and commodity prices are the key determinants of commercial imports. In the following sections, export earnings performance and international commodity price trends are reviewed.

Export Performance

Historical export earnings growth has varied widely across the regions and countries in this study. Data were reviewed for 61 low-income countries (the same set of countries covered in the report with the exception of the NIS countries because of the lack of data). To compare changes in trends in export earnings during the historical period, growth was calculated for two different time periods—1980-90 and 1990-96 for four regions: Sub-Saharan Africa, North Africa, Latin America, and Asia (table B-1). Sub-Saharan Africa is the only region that experienced a slowdown in earnings growth between the two time periods: from 3 percent per year to 1.6 percent. Growth in the other regions accelerated. Latin America saw the biggest jump—from roughly 1 percent in the early period to 5.4 percent in the more recent period. Asia's export earnings growth was the strongest of all the regions in both time periods and measured nearly 11 percent per year in the 1990s.

The differences in export performances of regions and countries stem from a variety of internal and external factors. Most developing countries are price takers in the international market, but their export volume response to these prices is not uniform and is influenced by internal policies and the flexibility of their production system. For example, Sub-Saharan Africa's regulatory policies have influenced trade patterns. The region's transportation policies have been structured in such a way that exports of higher valued processed goods are discouraged. This was one factor that contributed to the region's continued dependence on primary products.

Export volume: Evidence of policy successes and failures is clear upon review of the trends in export volume in each region. The historical period was divided into two periods, 1980-90 and 1990-96, to compare changes in growth rates over time (these time periods were chosen due to availability of data). Both North Africa and Sub-Saharan Africa experienced a slowdown in their export volume growth rates in between the two time periods. North Africa, however, started from a higher base rate. Export volumes in this region fell from an annual growth rate of 5 percent during 1980-90 to 4.4 percent in 1990-96. In Sub-Saharan Africa, growth in the early period measured less than 2 percent per year and fell to less than 0.4 percent in the more recent period. In other words, the region has experienced virtually no growth, on average, in export volume in the 1990s. In fact, half the coun-

Table B-1--Export Growth

	Value		Volume	
Region	1980-90	1990-96	1980-90	1990-96
	Percent per year			
North Africa	4.6	4.8	5.0	4.4
Sub-Saharan Africa	3.0	1.6	1.9	0.4
Asia	8.4	10.8	7.4	11.2
Latin America	1.1	5.4	0.8	3.0

Source: World Development Indicators, 1998.

tries in this region saw their export volumes decline during this time. In Latin America, growth in export volume strengthened from less than 1 percent per year in the early period to 3 percent in the more recent period. This change was driven by significant improvement by Ecuador, El Salvador, Honduras, and Peru. Asia had the greatest export volume growth of all the regions, averaging 7.4 percent annually through the 1980s and exceeding 11 percent in the 1990s.

There is a general consensus that such disparities in performance stem from micro- and macroeconomic policies of the countries. Studies have shown that trade and exchange rate policies in poor performing countries have often taxed exports in favor of import-substitute products. The evidence also indicates that these policies have been more widespread with respect to agricultural products. A 1988 study by the World Bank measured the effects of policy intervention on agricultural commodities in several developing countries. The policy interventions for selected commodities were decomposed into direct (sector specific) and indirect (economywide) interventions. The results showed that the negative indirect effects of intervention policies were much stronger than the negative direct effects. In fact, in Ghana and Zambia, the positive direct effects were eroded by strong negative indirect (economywide) effects.

Recognizing these costs, agencies attached conditionality to their multilateral and major bilateral lending to developing countries in an attempt to persuade the countries to amend their policies. The response of developing countries, in general, was positive. Many countries, including many in Sub-Saharan Africa, adopted flexible exchange rate policies to reduce the bias against export sectors. Currency depreciation, which lowers export prices, is expected to increase export volumes and export shares.

An FAO study that quantified the relationship between exchange rates and exports has also provided some insights. The results of the study showed that while exchange rate adjustments are necessary, they are not sufficient conditions to revitalize exports. A World Bank study concluded that uneven policy reforms across sectors and countries in Sub-Saharan Africa can explain the weakness of the export sectors. In Sub-Saharan Africa, the trade sector continues to be the main source of government revenue and according to available reports, trade policy distortions continue.

Export prices: In addition to export volume, export prices are the other principal determinants of trends in export earnings. Declining prices can mitigate growth in export volumes. Likewise, rising prices can compensate for a decline in export volumes. In the case of Sub-Saharan Africa, slow growth in export volumes has been exacerbated by weak prices for the commodities the region exports. This region exports principally primary products, prices of which peaked around 1980, fell considerably through the 1980s and have, in most cases, not fully recovered. Moreover, the World Bank is projecting these prices to decline more than 2 percent per year through the next decade. One reason is that demand for these primary products is not particularly strong.

Several countries in the region rely heavily on metals and minerals for much of their export earnings. Real prices of these products are equal to roughly 75 percent of their 1990 price—which was considerably lower than the 1980 price. Real prices are projected to remain flat through 2005. Many countries in the other regions included in this study have moved away from exports of primary products toward manufactured goods, prices of which have increased 3 percent annually since 1980.

It has been argued that export diversification can improve export earnings. A simple comparison of trends in exports and commodity composition in different regions demonstrates the likely linkages between these two factors. Sub-Saharan Africa experienced the lowest export growth of all the regions in this study and also had the largest share of agricultural exports. The bulk of these exports were beverages, sugar, and tobacco.

As in Sub-Saharan Africa, agricultural commodities account for a large share of export earnings in Latin America. However, Latin America has a larger and growing share of exports in manufactured goods, reaching 40 percent in 1996. In Sub-Saharan Africa, this share remained below 10 percent throughout the historical period. The obvious benefits of these products is that demand for them is growing faster than for primary agricultural commodities. Moreover, unlike agricultural commodities, they are not vulnerable to the vagaries of weather.

In North Africa, fuel exports continue to play an important role in total export earnings, but their share fell considerably during the historical period. During the same time period, earnings growth in the region has accelerated. Some of this growth can be attributed to a sharp increase in the share of exports coming from manufactured goods, reaching 41 percent in 1990.

A similar, but even more dramatic, path is evident in the Asian countries. The agricultural share of total exports was cut in half during the historical period while that of manufactured goods more than doubled. These changes were a major factor behind the region's strong export growth.

International Food Prices

In addition to exports, food prices play a significant role in determining import capacity. As import prices fall, capacity to import rises and vice versa. Grain prices, in real terms, fell nearly a half between 1980 and 1990. Other than price spikes in 1995 and 1996, prices have remained fairly steady in the 1990s. Exporters responded to the 1996 price hike with a sharp increase in output. This ability to respond to

price hikes reflects the excess capacity in major exporting countries and supports the opinion that sustained periods of higher prices are unlikely.

These price trends indicate that the low-income, food-deficit countries are in a much better position now than in the early 1980s. However, even a one-time price spike can adversely affect a country. Between 1994 and 1996, grain prices jumped more than 30 percent in real terms. Although the volume of grain imports of low-income, food-deficit countries increased nominally between 1994 and 1996, the grain import bill rose 50 percent. Given the financial constraints facing most of these countries, this volatility adversely affects short-term economic growth.

Modeling Food Imports and Gaps Under Alternative Scenarios

The Food Security model was used to determine the impact of changes in the growth path of export earnings and a one-time shock to food prices on imports and food security in these regions (table B-2). In the baseline, combined commercial imports by the 66 countries are projected to total nearly 73 million tons in 2008. The nutritional food gap is projected at 28.4 million tons, nearly 80 percent of which will be accounted for by Sub-Saharan Africa.

In the first scenario, a highly optimistic export growth path of 10 percent per year, in real terms, was used for each year of the projection period (1998-2008). This growth rates translates into a doubling of export earnings, on average, for the 66 countries over the next 10 years. In the baseline scenario, annual real export growth ranges from 2 to 6 percent.[2] The accelerated export growth assumption is projected to result in a 46 percent jump in commercial imports, on average, for all the regions relative to the base scenario. Reviewing the results by region, gains in commercial imports are projected to be the largest in Sub-Saharan Africa and the lowest in the NIS region. This is due to the differences in export growth rates in the baseline projections. The highest export growth was projected for NIS countries, while the lowest was for Sub-Saharan Africa. As for the implications for food security resulting from a boost in export earnings, the nutritional gap is projected to decline 16 percent, on average, relative to the base scenario. Latin America is projected to see the greatest decline in the gap, while the smallest change is projected for Asia. These impacts are consistent with the import dependency of these regions. In Latin America, imports account for a large share of food availability. Therefore, when imports are cut, the implications for food security will be significant. Conversely, in Asia, import dependency is quite low (generally below 5 percent). As a result, when imports are cut, the implications for food security are marginal. While the accelerated export growth is projected to improve the food security situation across all regions, the problem is not eradicated.

In the second scenario, the impact of a *one-time* shock—a 20-percent increase in grain prices—as was experienced in 1996, was examined. In the baseline scenario, the assumption was a 2-percent annual price decline. In accordance with expectations, the higher prices are projected to result in a decline in commercial imports—8.2 percent, on average, for all countries. The regional responses were fairly consistent with the overall results. The reduction in commercial imports is projected to result in a deterioration in food security and this is reflected in the 4.2 percent rise in the nutritional gap relative to the base scenario. The situation is projected to deteriorate the greatest in Latin America where the gap increases more than 40 percent. On the other hand, the price hike is projected to have a negligible effect on the food security situation in Sub-Saharan Africa. Again, these results can be explained by the degree of import dependency in these regions.

In the third scenario, the accelerated growth rath of the first scenario is combined with the one-time price shock of the second scenario. In this scenario, the negative effects of the one-time shock completely erode the positive effects of higher export growth. Commercial imports are projected to decline more than 8 percent relative to the higher export growth scenario. Moreover, the nutritional gap is projected to be 4.6 percent larger. However, the food security implications are projected to be better under this scenario than in the base scenario. Even when the price shock is added to the high export growth assumption, the food gaps are projected to be smaller than those under the base scenario. There is no surprise in this finding, but it illustrates the point that if countries can maintain a high export growth path, their food security situation can improve despite periodic price shocks.

In sum, the analysis clearly shows that improved export performance will enhance the food security of the countries, but it cannot eradicate the problem. In many cases, the export growth needed to boost the import capacity to the level necessary to close the food gaps is simply unrealistic. For example, in Sub-Saharan Africa, commercial food imports must grow nearly 13 percent annually to close the average nutritional gap by 2008. The parameters used in the model assume that the response of food imports to changes in foreign exchange availability is not one-to-one (i.e., inelastic response in the range of 0.6 to 0.8, depending on country—estimates based on cross-country data). This means that, everything being equal, to achieve a 1-percent growth in food imports, foreign exchange availability must grow 1.3 to 1.7 percent. If the net flow of capital stays constant or even declines as has been the case in many of these countries, exports will remain the sole source of import financing. This means that much higher export earnings will be required to attain the necessary foreign exchange availability. Clearly, achieving dramatically higher growth in

[2]Projected annual growth in real export earnings is 2.1 percent for Sub-Saharan Africa, 3.7 percent for North Africa, 4.1 percent for Asia, 5.1 percent for Latin America, and 6.1 percent for NIS.

Table B-2--Scenario Analysis

Region	Baseline	Scenario 1 1/	Scenario 2 2/	Scenario 3 3/
		Million tons		
North Africa				
Commercial imports	23.8	35.2	22.0	32.5
Nutritional gap	0.0	0.0	0.0	0.0
Sub-Saharan Africa				
Commercial imports	9.8	15.7	9.0	14.4
Nutritional gap	22.4	18.8	23.0	19.5
Asia				
Commercial imports	23.4	34.8	21.3	31.7
Nutritional gap	4.7	4.1	5.0	4.3
Latin America				
Commercial imports	13.8	18.3	12.7	16.8
Nutritional gap	0.7	0.4	1.0	0.5
NIS				
Commercial imports	2.0	2.5	1.9	2.3
Nutritional gap	0.6	0.4	0.7	0.5
Total 66 countries				
Commercial imports	72.9	106.5	66.9	97.7
Nutritional gap	28.4	23.8	29.6	24.9

1/ 10 percent real export growth. 2/ 20 percent increase in real grain prices. 3/ 10 percent real export growth plus a 20 percent increase in real grain prices.

export earnings is unlikely. This also means that eradicating food insecurity in the poor countries is a complicated task and requires a comprehensive strategy to increase export earnings as well as domestic production.

Conclusion

If the future growth path of exports follows the historical trends in these study countries, export earnings will remain far short of financing the required imports. Assuming an accelerated export growth path of 10 percent through the next decade will reduce, but not eliminate the food gaps. Periodic price hikes also remain a hinderence to financing imports and a threat to food security.

Domestic policies of the countries, however, can improve this outlook. In most countries, export markets continue to be distorted by a wide range of domestic policies and border measures that reduce opportunities for export diversification and growth. Improving trends in food security, however, requires a simultaneous effort to improve both export and domestic production performance. This is particularly important for most of the food-insecure countries, because agriculture continues to be the main source of income for the rural population, where most of the food insecure live. Moreover, agricultural products contribute to a large share of export earnings in many countries.

Research has shown that international trade is one of the most important factors affecting food security. Overall, food-deficit countries must continue their current policies of liberalizing trade and the agricultural sector and implement structural adjustments that improve the performance of the agricultural sector. Improving export performance will enhance the financial condition and creditworthiness of these countries and thereby attract foreign investment. For the low-income countries, increasing export earnings will increase the capacity for importing not only food, but capital goods as well that are essential for long term growth.

References

Derosa, Dean A. "Increasing Export Diversification in Commodity Exporting Countries," *International Monetary Fund Staff Papers*, Vol. 39, No. 3, Sept., 1992.

Diakosavvas, D. and C. Kirkpatrick. *The Effects of Trade and Exchange Rate Policies on Production Incentives in Agriculture*. UN Food and Agriculture Organization, Rome 1990.

Krueger, A.O., M. Schiff, and A. Valdes. Measuring the impact of sector-specific and economy-wide policies on agricultural incentives in developing countries. *The World Bank Economic Review*, 1988.

Shapouri, Shahla and S. Rosen. "Export Performance in Africa," 1989. Staff Report No. AGES 89-16. Economic Research Service, U.S. Department of Agriculture.

World Bank. *Adjustment in Africa: Reforms, Results, and the Road Ahead*, 1994.

World Bank. *Exports of Developing Countries: How Direction Affects Performance*, ed. by Oli Havrylyshyn, The World Bank: Washington, DC, 1987.

World Bank. *Global Economic Prospects and the Developing Countries*. The World Bank: Washington DC, various issues.

Yeats, Alexander J., with A. Amjadi, U. Reincke, and F. NG, "Did Domestic Policies Marginalize Africa in International Trade?" January, 1997. Washington, DC: World Bank.